

July 14, 1953

R. M. BERGSTEIN

2,645,407

BOX WITH CARRYING HANDLE

Filed Sept. 1, 1948

2 Sheets-Sheet 1

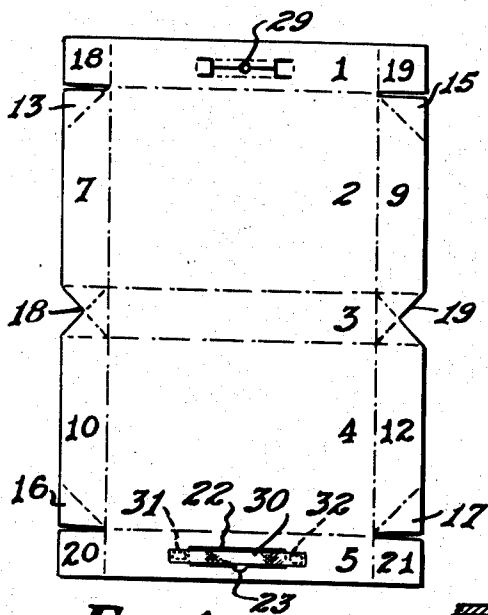


FIG. 1.

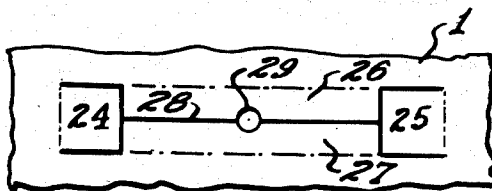


FIG. 2.

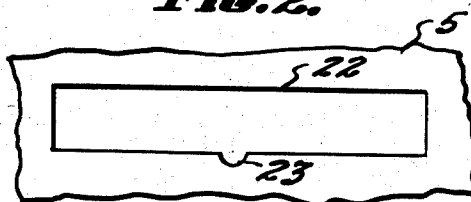


FIG. 3.

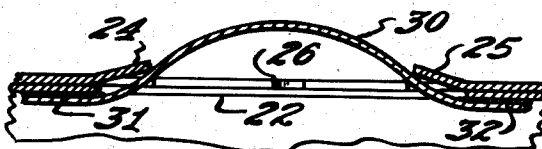


FIG. 8.

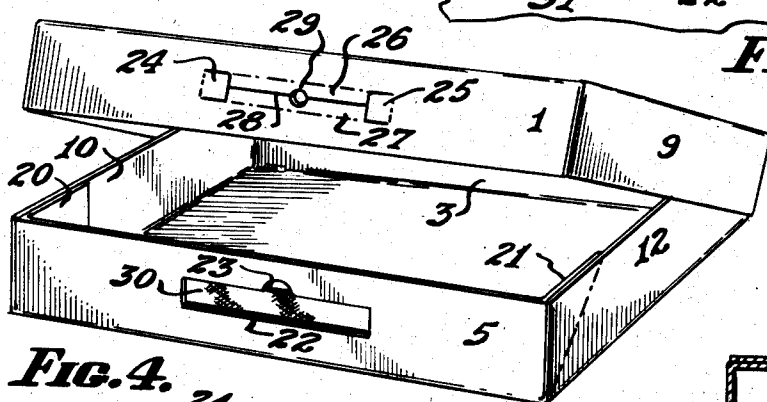


FIG. 4.

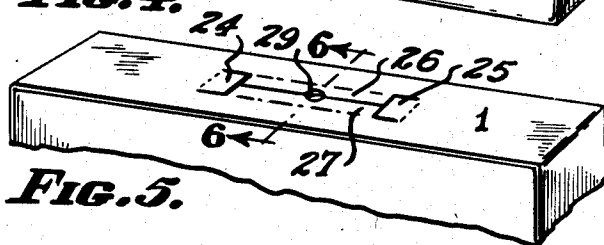


FIG. 5.

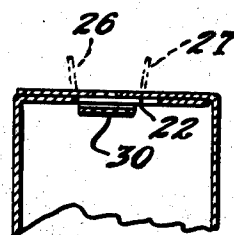


FIG. 6.

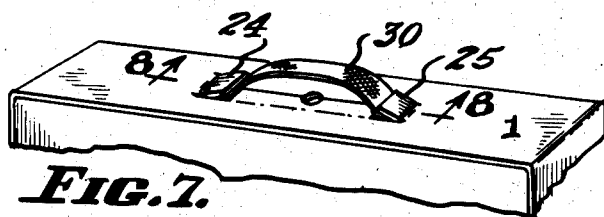


FIG. 7.

INVENTOR.
ROBERT M. BERGSTEIN.
BY
Allen Allen
ATTORNEYS.

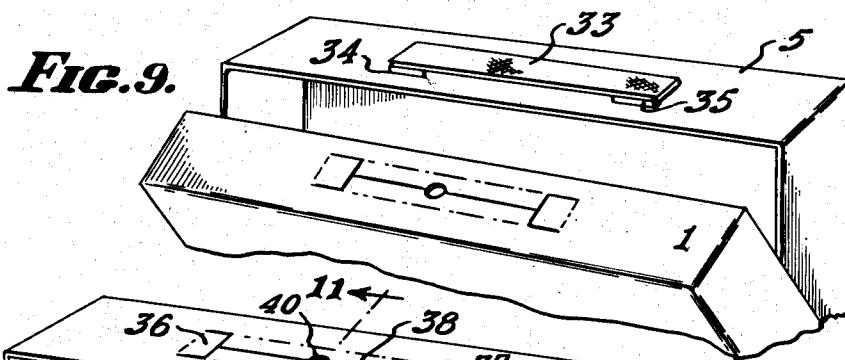
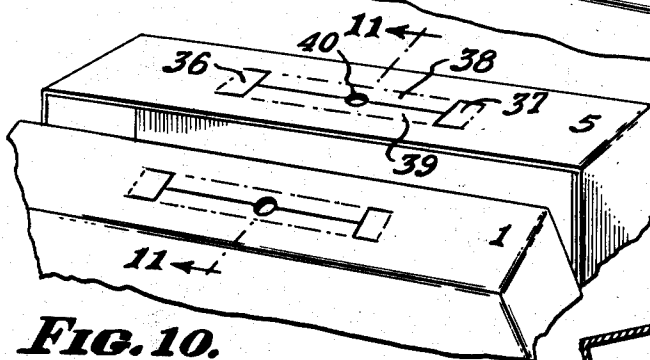
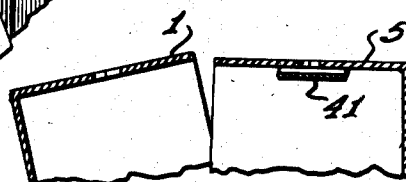
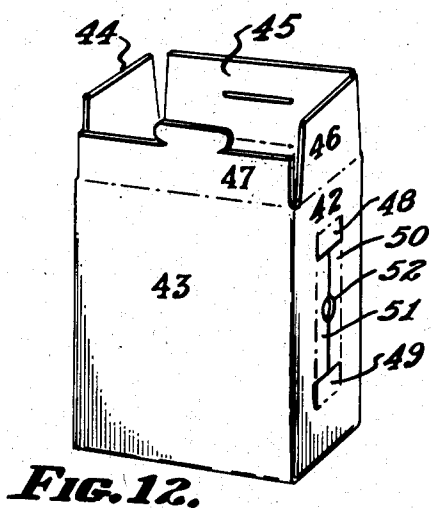
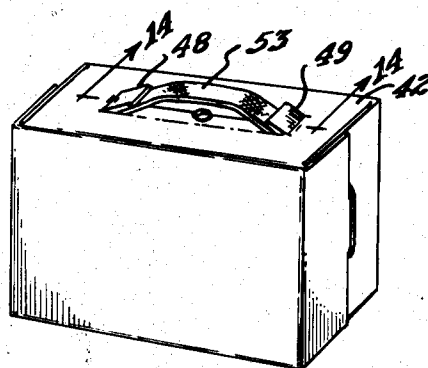
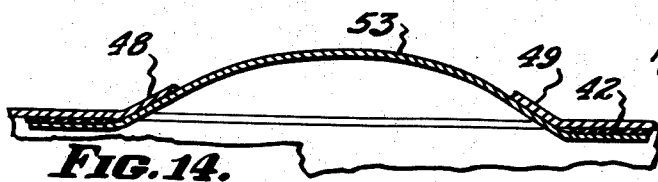
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2 Sheets-Sheet 2



INVENTOR.
ROBERT M. BERGSTEIN.
BY
Allen Allen
ATTORNEYS.

UNITED STATES PATENT OFFICE

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BOX WITH CARRYING HANDLE

Robert M. Bergstein, Wyoming, Ohio

Application September 1, 1948, Serial No. 47,171

5 Claims. (Cl. 229—52)

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My invention has to do with the provision of paperboard box structures having built-in handle elements whereby the filled boxes may be easily carried.

Hitherto the need for carrying handles has been recognized, particularly in connection with suit boxes in which various articles of clothing may be packed and carried away by the user. The art has suggested various types of handle structures such as strap-like members with enlarged ends which must be put in place on the boxes by hand insertion methods during their manufacture, cumbersome and expensive wire handle elements which must be engaged with the box after it is filled and closed, integral, paperboard handle elements articulated to one of the box walls, which must be formed by complicated folding operations, frequently with hand insertion steps, or which require extensive manipulation after the box is filled and closed, and separate paperboard handle elements preattached to the collapsed box, but which require expensive and elaborate mechanism for their attachment and folding. All of these constructions add appreciably to the cost of boxes so equipped; many of them have to be handled as separate items either during manufacture or use; many of them interfere with the use of the box as a non-handle-bearing structure for storage or shipment; and most of them entail difficulty in manipulation on the part of a hurried sales person or the purchaser of the garments. In addition most of them present grasping elements which are inherently unsatisfactory particularly when any great weight of contents is to be carried in the boxes.

It is an object of this invention to provide a handle-equipped box at an insignificant increase in cost over boxes of the same type but not so equipped.

It is an object of this invention to provide a handle structure which does not in any way interfere with the use of the box as a non-handle-bearing structure for storage and shipment, and which does not significantly weaken the box for these purposes.

It is an object of the invention to provide a handle structure which is greatly improved from the standpoint of comfort, especially when considerable weights are to be carried.

It is an object of the invention to provide a handle construction and a box so equipped, which is pleasing in appearance and simple to use, requiring no complicated manipulations on the part of the sales person or user, and being substantially foolproof.

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It is an object of this invention to provide a handle structure involving in its provision no extra folding of the blank, no hand insertion, and only the simplest and least expensive type of equipment for high speed application.

It is an object of the invention to provide a handle construction which is as applicable to a single wall construction on the top or carrying surface of the box as it is to be a double walled top construction such as found in the conventional one-piece suit-box constructions, thus widening the application of my handle to a great variety of paperboard packages to be carried.

These and other objects of the invention which will be set forth hereinafter, or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that construction and arrangement of parts, and in those procedures of which I shall now set forth certain exemplary embodiments. Reference is made to the accompanying drawings wherein:

Figure 1 is a plan view of the blank for a conventional type of one-piece suitbox, but equipped with the handle of this invention.

Figure 2 is a plan view on a larger scale of the cut and scored condition of the outer top wall of the box of Figure 1.

Figure 3 is an enlarged plan view of the cut and scored condition of the inner top wall prior to the attachment of the handle element per se.

Figure 4 is a perspective view of the partially closed box.

Figure 5 is a partial perspective view of the fully closed box, with the handle element concealed and not in use.

Figure 6 is a transverse partial sectional view taken along the section line 6—6 of Figure 5.

Figure 7 is a partial perspective view of the same box with the handle element in operative position for use.

Figure 8 is a longitudinal partial section taken along the section line 8—8 of Figure 7.

Figure 9 is a perspective view showing a partially open box with a modified form of handle construction.

Figure 10 is a perspective view of a partially open box showing a modification of the treatment of the inner and outer top walls.

Figure 11 is a partial section taken along the section line 11—11 of Figure 10.

Figure 12 is a perspective view of an erected tubular box or container of the lock-end type, closed on one end, and provided with my handle structure, the handle being concealed and not in the position for use,

Figure 13 is a perspective view of the same box in fully closed condition, and with the handle element in exposed position and ready for use.

Figure 14 is a partial sectional view taken along the section line 14—14 of Figure 13.

Briefly, in the practice of my invention I employ as a handle element per se a strip of stretchable material. The material may, if desired, be elastic in the sense of having a tendency to return to its original dimensions when stretched longitudinally; but this quality is not necessary. I have found that when I employ a strip of material capable of being substantially stretched, I may attach it to a wall of the box by spaced areas of adhesive or other attachment means, in a position in which the strip lies parallel to and flat-wise against the wall to which it is attached. Such a strip, by reason of its stretchability, may be withdrawn through an opening either in the same wall or in another overlying wall, to form a carrying handle. When not so withdrawn, and as the box is made, the strip lies flat-wise against the wall to which it is attached, and does not interfere in any way with any of the normal uses of the box when the handle is not required. It may be concealed behind access means either in the wall to which it is attached or in an overlying wall or both.

A stretchable material as herein set forth forms an excellent handle especially for the carrying of considerable weights, because the stretchability and softness of the material of which it is made permits the grasping portion of the handle to roll and provide a relatively broad carrying bail devoid of sharp edges. Thus much greater weights can be carried in comfort than with wire handles, stiff metallic or paperboard strips having sharp edges, or sharply folded paperboard elements in which the weight must be borne against cut or folded edges.

Various materials are available for use as stretchable strips, and I do not regard specific materials as limitations upon the invention. For example, I may use textile fabric tapes woven or knitted so as to be stretchable, or incorporating elastic strands in their structure. I prefer to employ a universally stretchable creped paper product of single ply or multi-ply character, made by the process of United States Patent No. 2,008,180, to Kemp, from kraft paper stock or the like. Such a product may be treated, if desired, as by the incorporation of resinous or rubbery substances, to increase its tear strength. Other creped products may likewise be used.

In Figure 1 I have illustrated a known form of knocked down, infolded suit box, the blank for which is shown in plan. It comprises an outer top wall 1, a main side panel 2, a bottom wall 3, a second main side panel 4 and an inner top wall 5 in articulation in the order named. End wall members 7, 9, 10 and 12 are articulated to the ends of the main panels 2 and 4 respectively. Triangular portions 13, 15, 16 and 17 are demarked at the ends of the end wall elements by diagonal score lines as shown. Bellows folding constructions 18 and 19 connect the respective ends of the end wall elements and the bottom wall. Glue tabs 18, 19, 20 and 21 are articulated to the ends of the outer and inner top wall elements.

Blanks of this type can be folded and glued on known machines. Without attempting to indicate the order of the operations, the end wall elements 7, 9, 10 and 12 together with the bellows folding portions 18 and 19 are turned inwardly on the longitudinal score lines, and the triangular

portions 13, 15, 16, and 17 are reversely folded to overlie the end wall elements. The glue tabs 18, 19, 20 and 21 are folded inwardly on their score lines. With the application of suitable adhesive either to the glue tabs or to the triangular portions, the outer and inner top wall the adherence of the glue tabs and the triangular elements 1 and 5 are infolded, which results in the adherence of the glue tabs and the triangular portions. The result is a collapsed, infolded box which may be shipped to the user in the described condition. The user erects the inner and outer top wall elements and the end wall elements by pulling upwardly upon them. The box parts can then be folded with respect to the bottom wall 3, accompanied by bellows folding of the portions 18 and 19, giving the familiar one-piece suitcase construction illustrated in Figures 4, 9 and 10.

The blank illustrated in Figure 1 is made from suitable boxboard in the cutting and scoring press in the usual fashion. Dot-dash lines indicate lines of score, while solid lines indicate lines of cut. One way of practicing my invention in connection with such a blank and box involves a configuration of the inner and outer top wall elements such as will now be described. This configuration is also attained on the cutting and scoring press.

The inner top wall element 5 is provided with an elongated slot or cut-out 22 as most clearly shown in Figure 3. This cut-out may, if desired, be notched at its side as at 23 to facilitate engagement of the handle member by the thumb or finger. The outer top wall element is provided with means whereby the bail portion of the handle can be drawn through it and preferably with one or more flaps which can be opened for the purpose, and closed again after the handle is in operative position. A single U-shaped line of cut will provide such a flap; but I prefer the structure most clearly shown in Figure 3. At each end of an area which will coincide with and be substantially the same as the cut-out 22 I provide small flaps 24 and 25, each formed by a U-shaped cut as shown. Between these lie a pair of longitudinal flaps 26 and 27 articulated by score lines to the body of the outer top wall element 1 and severed or severable from each other by a line of cut or line of severance 28. If desired a cut-out may be formed as at 29 to facilitate engagement of the flaps 26 and 27 by the fingers. The handle element, which is the strip of stretchable material hereinabove described, is in this modification attached at its ends to the inner surface of the inner top wall 5. This is accomplished by the areas of adhesive indicated at 31 and 32. The strip 30 is somewhat narrower than the width of the slot 22.

It may be simply applied during the movement of the blank; and this may be accomplished as a separate step before any of the other folds are made, on the known folding and gluing machines, referred to above. However, I prefer in the case of structures such as shown in Figure 1 to incorporate the handle-applying device, as described below, into the known machines which are used for folding and gluing blanks of this type. In this event the handle-applying device is timed to synchronize with the timed means carrying the blank through the folding and gluing machine. The location of this device in this machine is a matter of choice, as I may do it after the blank is fed out from the hopper and before the wall and corner folding operations begin, or it may be done after

the blank has been partially folded, i. e., after walls 7, 9, 10 and 12 have been folded inwardly with triangular corner portions 13, 15, 16 and 17 respectively folded back thereon, and after corner flaps 18, 19, 20 and 21 have been folded in, but before wall 5 is folded in. In this manner automatic boxes of the type shown in Figure 1 may be produced with no additional manufacturing steps and no additional separate operations, to provide my handle-attached box with no additional cost other than the actual stretchable material used in forming the handle. The areas of adhesive 31 and 32 may be applied to the inside surface of the inner top wall element 5 (which is uppermost in the blank as it is being moved through the machine) by means of an ordinary glue fountain and printing glue roller. The material for the strip 30 is fed from a supply roll on suitable supports by pinch rolls timed with the movement of the blanks through the machine, and is deposited on the blank surface in such a way that its leading end overlies adhesive area 31. A knife or other cut-off device is located beyond the pinch roll feeding means and severs the material into the strips 30, and the trailing ends of these strips move downwardly to overlie the adhesive area 32. Press roll means through which the blank carries the adhesively secured strip may be supplied.

The strip 30 as applied is flat or substantially so, and lies flat-wise against and in parallelism with the inner face of the inner top wall element 5. It does not in any way interfere with the normal use of the box. Figure 4 illustrates the erected and partially closed box in the condition in which it may be filled with the desired contents. It is closed, as shown in Figure 5 by bringing the elements together. The flat structures 26, 27, 24 and 25 in the outer top wall cover the handle element attached to the inner top wall; and the box in this condition is suitable for all storage, shipping and other uses of similar structures not requiring a carrier handle.

When the use of the handle is desired, the flaps 26 and 27 are raised by means of the fingers as shown in Figure 6, which discloses the handle element 30 beneath. This element is engaged by a thumb or finger, the notch 23 facilitating this engagement, and is drawn outwardly through the opening provided by flaps 26 and 27. This is rendered possible by the stretchability of the handle strip 30, since its ends are fixedly secured to the under surface of the inner top element 5. When the handle element has been withdrawn through the opening, the flaps 26 and 27 may be folded back into position coplanar with the outer top wall element 1 beneath the handle. The box with the handle in operative position is shown in Figure 7 in perspective, and in section in Figure 8. The flaps 24 and 25 in the outer top wall element overlie the ends of the handle 30 where they pass through the board layers; but there is space enough between them for the handle element 30 to provide a convenient carrying bail. It will be noted in Figure 8 that the ends of the handle element 30 are affixed to the undersurface of the inner top wall element 5 in such a way that strain on the handle produces a lengthwise pull at the area of attachment. Thus there is no peeling action tending to separate the handle strip from the board.

By reason of this straight pull it is quite possible, as indicated in Figure 9, to attach a handle strip 33 directly to the outer surface of the in-

ner top wall element 5 by means of adhesive areas 34 and 35, and omit the slot 22 and notch 23 in the inner top wall element. The outer top wall element in the modification of Figure 9 is configured as hereinabove described, and like parts are given like index numerals. Whereas in the structure of Figure 1 the handle strip 30 is attached to the inner surface of the inner top wall element 5, in the modification of Figure 9 the handle strip 33 is attached to the outer surface of the inner top wall element 5 after the top wall elements have been in-folded, and as the last operation performed upon the blank by the machine, excepting for pressing and stacking. The strip 33 however is attached to the blank by similar means and in a similar fashion, preferably as a part of the machine operation of folding and gluing.

In either event the cost is insignificant. Whatever configuration is given to the inner and outer top wall elements is a matter of the die in the cutting and scoring press, and with the simple apparatus which has been described, the attachment of the strip 33 or 30 involves substantially no greater expense than the actual cost per carton of the handle strip material.

A further modification is indicated in Figure 10 where the inner top wall element 5 has been configured like the outer top wall element 1 previously described. Thus it is provided with small end flaps 36 and 37, and longitudinal flaps 38 and 39, preferably with a cut-out as at 40. The several flaps in the inner and outer top wall elements correspond substantially in size and placement so that they will come into juxtaposition when the box is fully closed. The handle strip 41, as most clearly shown in Figure 11, is again attached to the inner or under face of the inner top wall element 5, in the manner heretofore described. The distance between the parallel score lines by which the flaps 38, 39 and 26, 27 are articulated to their respective walls may advantageously be made, in this modification, substantially wider than the width of the strip 41. The box, as before, is useable, without a handle as a shipping and storage structure. When the handle is desired for use, the several flaps 26, 27, 38 and 39 are concurrently depressed by the thumbs of the operator, until they clear the side edges of the strip 41, the stretchability of the strip 41 permitting this action to occur. When the several flaps are released they tend to return to their original positions, bringing the handle strip up with them, and leaving it in a position to be grasped for carrying. No other folding operations are required in this modification.

It will be observed that in the structures thus far described, my handle when in operative position serves to maintain the box in closed condition. When it is desired to open the box, the handle element is brought beneath the outer top wall element by a reversal of the operations heretofore described. The box may then be opened, and may be reclosed and reused as many times as desired, with or without use of the handle.

My handle structure is not limited in its utility to one-piece boxes, but may be employed with two-piece boxes in addition to other means for maintaining closure, as will readily be understood. Nor is it limited to use in boxes having inner and outer top wall elements. In Figures 11-14 inclusive I have illustrated another

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form of box, which in this instance is a tubular carton having body walls in articulation, two of which are shown at 42 and 43. The ends of the body wall elements are provided with closure flaps 44, 45, 46 and 47 which in this instance are illustrated as a lock-end closure, although it will be obvious that any other known form of closure may be employed.

The wall 42 is configured, as hereinabove described, with end flaps 48 and 49, and longitudinal flaps 50 and 51, preferably with a cut-out 52. As most clearly shown in Figure 14 a handle element 53 is attached at its ends to the inner face of the body wall 42. This may be accomplished on the carton folding and gluing machine by means hereinabove set forth, prior to the tubing of the blank in the conventional fashion.

The completed box, after being erected, filled and closed, may be employed in any of the ways usual for tubular cartons. When, however, a carrying handle is desired, the flaps 50 and 51 are either raised or depressed as described above and the central portion of the handle element 53 is withdrawn, giving the structure illustrated in Figure 13. If a tight carton is desired, the carton of Figures 12 to 14 may be tubed in such fashion that a glue flap underlies the wall 42, and the glue flap may be widened to correspond substantially in area to the wall 42, being adhered to that wall about its edges. The handle element 53 may, as before, be adhered at its ends to the under surface of the body wall 42 prior to the tubing operation, and hence in the finished tubed carton will lie between the glue flap and the body wall 42.

Other modifications may be made in my invention without departing from the spirit of it. Having thus described my invention in certain exemplary embodiments, what I claim as new and desire to secure by Letters Patent is:

1. In a paperboard box having in the closed condition juxtaposed inner and outer wall panels, a handle element comprising a strip of stretchable creped paper adhesively secured at its ends only to the said inner wall of the box, said strip of stretchable material being adhesively secured to the said inner wall panel in planar,

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fully extended and substantially unstretched condition, an opening in the outer wall of said box overlying said handle element, said handle element being stretchably displaceable through the opening in said outer wall panel to form a carrying handle for said box.

2. The box construction claimed in claim 1 wherein said handle element is attached to the inner surface of the said inner wall and is displaceable through an opening in the said inner wall, said last named opening comprising a slot of a width substantially equal to the width of said handle element and of a length substantially equal to the length of the unsecured portion of said handle element.

3. The box construction claimed in claim 1 wherein said handle element is adhered to the inner surface of said inner wall and is displaceable through an opening in said inner wall, said inner wall being provided with at least one flap displaceable to form said opening.

4. The box construction claimed in claim 3 wherein the opening in said outer wall is also formed by at least one flap displaceable to form said last named opening.

5. The structure claimed in claim 1 wherein said handle element is adhered to the outer surface of the said inner wall, and wherein the opening in said outer wall is formed by at least one flap displaceable to form said opening.

ROBERT M. BERGSTEIN.

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